# Supporting Information

Author: Jie Cheng, Chad D. Vecitis, Hyunwoong Park, Brian T. Mader, and Michael R. Hoffmann

Title: Sonochemical Degradation of Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoate (PFOA) in Groundwater: Kinetic Effects of Matrix Inorganics

Number of pages: 4

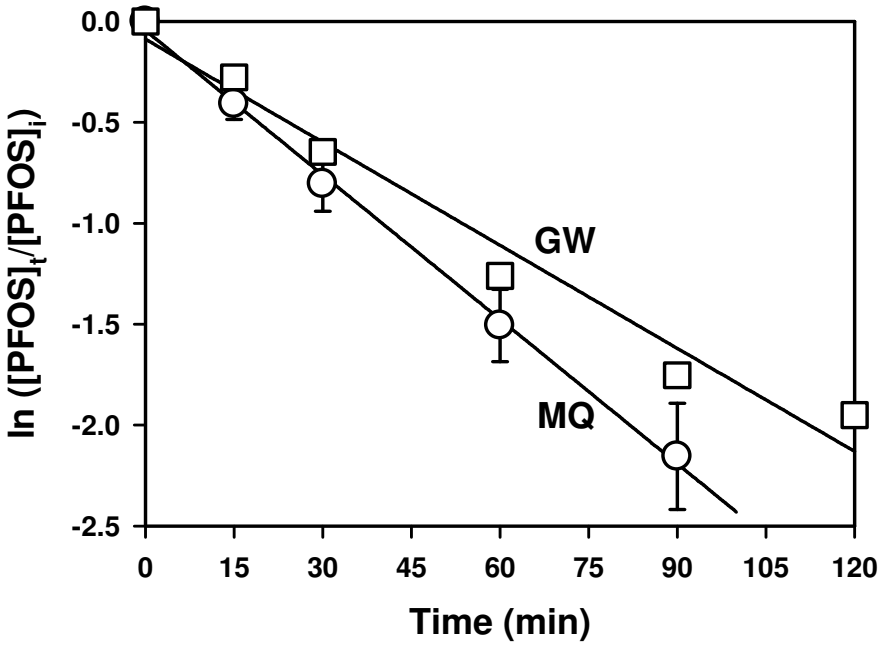
Number of Figures: 3, S1- S3

**FIGURE S1.** $\ln([PFOS]_t / [PFOS]_i)$ (a) and $\ln([PFOA]_t / [PFOA]_i)$ (b) vs. time in minutes during sonochemical degradation in Milli-Q water (○) and groundwater (□) under 354 kHz, 250 W $L^{-1}$, Ar, 10 $^oC$ for $[PFOS]_i = [PFOA]_i = 100$ μg $L^{-1}$. Each error bar represents one standard deviation from the mean of at least three experiments. $k_{MQ}^{-PFOS} = 0.0239$ $min^{-1}$, $k_{GW}^{-PFOS} = 0.0170$ $min^{-1}$, $k_{MQ}^{-PFOA} = 0.0469$ $min^{-1}$, and $k_{GW}^{-PFOA} = 0.0356$ $min^{-1}$.

**FIGURE S2**. The observed pseudo first-order rate constant for sonolysis of PFOA (clear bars) and PFOS (filled bars) in MilliQ water, aqueous solutions of 5mM NaCl, 5mM $NH_4Cl$, 2.5mM $CaCl_2$, and 2.5 mM $MgCl_2$. Reaction conditions are 612 kHz, 250 W $L^{-1}$, Ar, 10 $^oC$, and $[PFOS]_i = [PFOA]_i = 100$ μg $L^{-1}$.

**FIGURE S3**. The titration curve of the groundwater sample: pH of the groundwater sample vs. the concentration of HCl added in mM.

**Figure S1 (a) (b)**


0.0
-0.5
-1.0
-1.5
-2.0
-2.5
ln ([PFOS]t/[PFOS]i)
GW
MQ
0
15
30
45
60
75
90
105
120
Time (min)

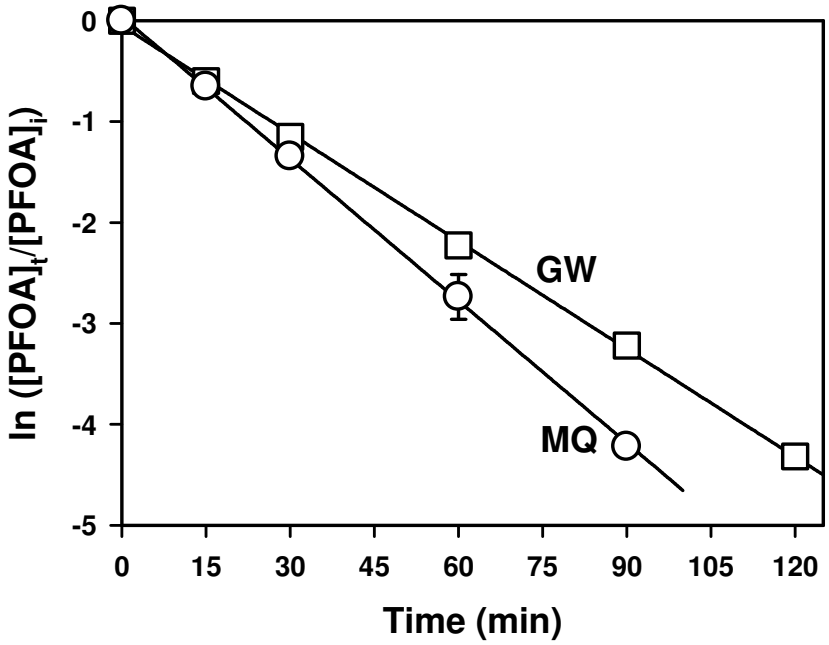

0
-1
-2
-3
-4
-5
ln ([PFOA]t/[PFOA]i)
GW
MQ
0
15
30
45
60
75
90
105
120
Time (min)

**Figure S2**

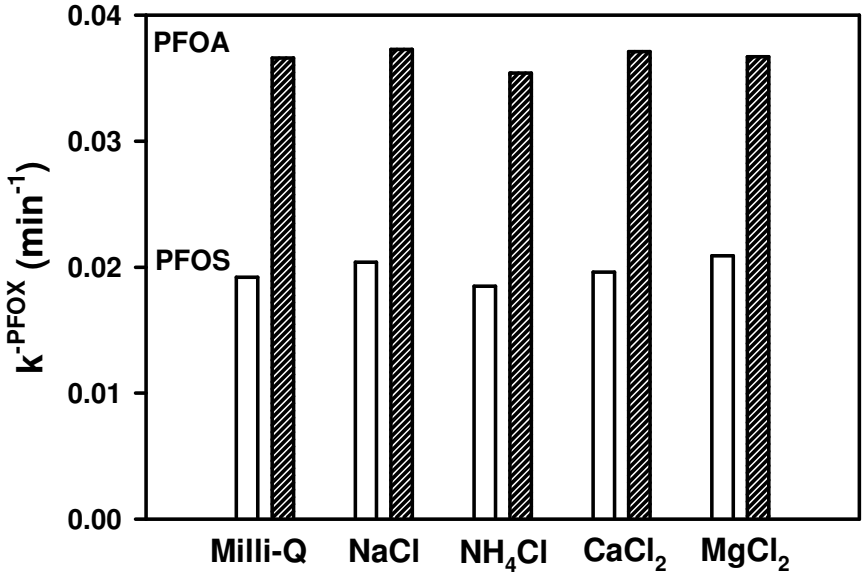



**Figure S3**